

and structure of coal itself, and also to the inquiries respecting the physical geography of the old carboniferous area, as treated of by Murchison, Elie de Beaumont, and more recently by Mr. Godwin-Austen, the observations of the latter bearing more immediately on the geological structure of the ground beneath London, in relation to the probable occurrence of some portions of the upper palæozoic series at less depths than is generally supposed.

The eighth lecture, in two parts, treats of the Devonian, Silurian, and Cambrian strata, as well as the nature of volcanic action and metamorphism, &c. In this part are some useful tables illustrative of the successive changes in the organic kingdom, the chronological appearance of certain classes and orders of animals, and of the rocks composed wholly or partly of animal remains. Much new and interesting matter is introduced in this chapter, and the researches of Sir R. I. Murchison and his early coadjutor, Prof. Sedgwick, fairly and fully acknowledged. The second edition of 'Siluria' of the former author is looked for with much interest; even in these volumes the editor has been kindly allowed to use some of the important facts and corrected classifications contained in that forthcoming work.

In conclusion, this edition of the 'Wonders of Geology' may be recommended as a useful manual to the student and general reader. We could have wished that some of the lignographs (41, 42) had been replaced, and, further, that the *mantle* of the late author had not fallen so heavily on the present editor, in his not curtailing the too frequent complimentary expressions to scientific friends. Science should be revered for its own sake; it has a reward, and the truth-loving spirit alone should be the stimulus in our finite attempts to vestigate the past wonders of Creative Wisdom.

Flore de l'Ouest de la France. By J. LLOYD. 12mo. Nantes, 1854.

This book, of fully 770 pages, includes the plants of Bretagne and the coasts of the Bay of Biscay to the north of the Gironde. It has much interest to British botanists, owing to the great similarity of the Bretagne plants to those of our south-western counties. The author possesses much skill in detecting the distinctive points of plants, and has usually so marked them by typographical arrangements as to render their separation from the long descriptions tolerably easy.

This book is very valuable and well deserving of attention. Its author is better acquainted with the doings of the botanists of other countries than is usual with those of France.

Flore du Centre de la France et du Bassin de la Loire. Third Edition. By A. BOREAU. 8vo. Paris, 1857.

The fact of this work having arrived at a third edition would have been a sufficient reason for considering it as deserving of attention, and an examination of its contents shows that it cannot be safely

neglected by those who are attached to the study of European plants.

The descriptive part of the work forms a volume of more than 750 pages. It is accompanied by a smaller volume consisting of an "Introduction," "Notions Élémentaires de Botanique," including a Glossary, a very complete "Clef analytique de la Flore," and "Propriétés et usages des plantes et étymologies de leurs noms."

The descriptive volume has the peculiarities, both advantageous and otherwise, which are usual in French Floras. The descriptions of both genera and species are very elaborate and most accurate; but the synonymy is almost wholly neglected, and the writings of foreign botanists seem to be little known to the author: German Floras are occasionally noticed, but those of England are scarcely recognized. There are no definite specific characters, and the reader is put to considerable trouble in order to discover the distinctions between the species; for the analytical tables are far from furnishing them, except to a very slight extent. This is a fault common to all the best modern Floras of France: indeed, that most valuable portion of the Linnæan system seems never to have established itself there. This defect must tend to the disadvantage of the French botanists; for many persons will not take the somewhat considerable trouble of discovering the characters upon which their species are founded, and thus they will suffer undeserved neglect.

M. Boreau announces in his Introduction that he belongs to that school which considers all permanent varieties as species (including, of course, cultivated plants), and consequently he admits a multitude of what many of our most eminent botanists call "false species." We incline to a middle course, believing that many of the plants pointed out by MM. A. Jordan, Boreau, and others, are really specifically distinct; but are nevertheless convinced that numbers of others have not the requisite constancy of character. For instance, we cannot believe that *Draba verna*, Linn., consists of nine species, with M. A. Jordan; nor of five, as recorded in the Flora before us. It is to be feared that in that case the Linnæan canon—that the genus or species shows the character, not the character the species—is too much neglected. Those who are accustomed to examine the minute external structure of plants have much reason for guarding themselves against this error, into which it seems natural for them to fall. But, on the other hand, those botanists seem to be at least equally in error who would neglect the more inconspicuous distinctions, and rashly, although perhaps conveniently for themselves and their believing followers, declare all plants between which they cannot find a good "paper" character, to be only varieties of each other. The reviewer believes that nature has specifically separated many plants which the acuteness of botanists has not succeeded in distinguishing by good definitions, and that we do not advance science when we decide authoritatively that the want of such definitions is conclusive against the existence of the species. He protests also, in common with our French contemporaries, against the modern doctrine, that a series of specimens from various parts of the world, such as are found

in the great herbaria, prove the identity of many so-called species. It is only the converse of a mistake often charged, rightly or wrongly, upon the school to which M. Boreau belongs. They are stated to describe species from single specimens; but they may return the compliment by announcing that their opponents combine them upon just as little evidence. For in what does a "series" of individual specimens—one from the Himalaya, another from Siberia, and a third from Europe, with a few more from other countries,—differ from so many single specimens of species? How can the writers know, in these cases, that they are not samples of plants presenting a constancy of character each in its own country? It is as rash to combine as it would be to separate them upon such imperfect evidence.

But we have perhaps occupied too much space with this matter, and run considerably away from the work proposed for consideration. We therefore conclude by recommending all earnest students of European, and especially British botany to obtain the "Flore du Centre de la France."

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

April 29, 1858.—J. P. Gassiot, Esq., Vice-President, in the Chair.

"On the Structure and Functions of the Hairs of the Crustacea."
By Campbell De Morgan, Esq.

The object of this communication is to determine, by the observation of their anatomical relations, the uses of the hairs and similar appendages to the shell of the Crustacea. The author mentions the observations of those who have of late specially investigated this subject. M. Lavallo noticed the connexion at times of the canals of the hairs with canals penetrating the whole thickness of the shell, and the *occasional* continuity of the matter which filled the hairs with that which exists in the corresponding canal of the shell. M. Hollard says that the canals of the shell which correspond to the hairs, are occupied by membranous investments, which embrace the base of the hairs, and seem to receive an extension of the nutrient system. He suggests that amongst other functions, the hairs may possibly be connected with that of general sensibility. Dr. Häckel in a recent publication has shown that the canals of the shell and hair are lined by a continuation of the outer layer of the soft internal integument, which he calls the chitinogenous layer. He describes minutely the structure of the inner integument, and his account on the whole agrees with that given by Milne-Edwards; but he does not recognize the presence in the canals, of any of the elements of the inner integument except the external cuticular or chitinogenous layer; nor the connexion of these canals with the corium which lies beneath it, and which receives abundantly nerves and vessels.

According to the investigations of the author, it is with this deeper,